CLAIMS

1. A method of launching a catapult, the method comprising:

generating a launching force (F_1) by means of a launching device;

keeping a carriage (4) immovable by means of a locking device (9) at a launching position (6) of the catapult;

directing the launching force (F_1) to the carriage (4), which is movable from the launching position (6) to a releasing position (7) guided by a body (1) of the catapult;

releasing the locking device (9) at a launching moment, whereby the carriage (4) moves towards the releasing position (7) at an accelerating speed by the action of the launching force (F_1); and

sending off an aircraft (5) arranged in the carriage (4) to the air at the releasing position (7), **characterized** by

directing a damping force (F_2) to the carriage (4) at the launching moment, the direction of the force being opposite relative to the launching force (F_1), and the damping force (F_2) resisting the movement of the carriage (4) towards the releasing position (7);

dimensioning the magnitude of the damping force (F_2) to maximum at the launching moment, and

reducing the damping force (F_2) from maximum to minimum after the launch on a predetermined examination period.

2. A method as claimed in claim 1, **characterized** by

reducing the magnitude of the damping force (F_2) relative to the movement of the carriage, and

reducing the damping force (F_2) from maximum to minimum once the carriage (4) has travelled a predetermined damping distance (L) towards the releasing position (7).

3. A method as claimed in claim 2, **characterized** by reducing the damping force (F_2) from maximum to zero on the damping distance (L), whose magnitude is between 150 and 500 mm.

4. A method as claimed in any one of the preceding claims, **characterized** by reducing the magnitude of the damping force (F_2) substantially linearly.

5. A method as claimed in any one of the preceding claims, **characterized** by dimensioning the maximum damping force (F_2) on

the basis of the magnitude of the launching force (F_1) employed.

6. A catapult for launching an unmanned aircraft and comprising:

an elongated body (1), a launching position (6) being provided on a portion of a first end thereof, and a releasing position (7) being provided on a portion of a second end thereof;

a carriage (4) movable from the launching position (6) to the releasing position (7) and back, and the carriage (4) comprising fastening members for supporting the aircraft (5);

a launching device configured to generate a launching force (F_1) for accelerating the carriage (4) in a launching direction (B) from the launching position (6) to the releasing position (7); and

at least one locking device (9) for keeping the carriage (4) at the launching position (6) and for releasing it at a launching moment,

characterized in

that the catapult comprises at least one takeoff damper (34) configured to generate a damping force (F_2) whose direction is opposite relative to the launching force (F_1), and the damping force (F_2) is arranged to restrict the acceleration of the carriage (4) at the launching moment, and

that the damping force (F_2) is at its maximum at the launching moment and that the damping force (F_2) is arranged to decrease to zero after the carriage (4) has moved a damping distance (L) of a predetermined magnitude in the launching direction (B).

7. A catapult as claimed in claim 6, **characterized** in

that the locking device (9) comprises at least one locking piece (25) configured to pivot around a joint (26),

that the locking piece (25) comprises at least one connecting member (27) for holding the carriage (4), the connecting member (27) being configured to release the carriage (4) when the locking piece (25) is turned towards the launching direction (B) by a predetermined angle position,

that at least one takeoff damper (34) is configured to resist the turning of the locking piece (25) towards the launching direction (B) and configured to generate the damping force (F_2), and

that the magnitude of the damping force (F_2) is arranged to decrease relative to a turning angle of the locking piece (25).

8. A catapult as claimed in claim 6 or 7, **characterized** in

that the locking device (9) comprises at least one takeoff damper

(34) configured to generate the damping force (F_2),

that the launching device comprises at least one actuator (12) configured to generate the launching force (F_1),

that the catapult comprises means for identifying the magnitude of the launching force (F_1), and means for adjusting the damping force (F_2) on the basis of the launching force (F_1).

9. A locking device for a catapult, comprising:

at least one locking piece (25) configured to pivot around a joint (26) towards a launching direction (B) and towards a returning direction (C) of the catapult;

a connecting member (27) provided in the locking piece (25), and to which connecting member (27) a carriage (4) comprised by the catapult is connectible before a launch and from where it is released after the launch,

characterized in

that the locking device (9) comprises at least one takeoff damper (34);

that the takeoff damper (34) is configured to generate a damping force (F_2); and

that the takeoff damper (34) is connected to the locking piece (25) and configured to resist the turning of the locking piece (25) towards the launching direction (B).

10. A locking device as claimed in claim 9, **characterized** in

that the takeoff damper (34) is a pressure medium cylinder,

that the takeoff damper (34) is connected to the locking piece (25) by means of a first joint (35), and further to a body (1) of the catapult by means of a second joint (36),

that the shortest distance of a straight line passing through the first joint (35) and the second joint (36) is arranged to generate an effective distance (37), and

that the turning of the locking piece (25) after the launching moment is arranged to reduce said effective distance (37), the damping force (F_2) also being arranged to decrease substantially in the same ratio.